

CLAIMS

1. A tread of thickness H, intended to be used in a tire having a carcass reinforcement surmounted
5 by a crown reinforcement, this tread being provided on its outer surface with a plurality of grooves
of depth h, including at least circumferential grooves separated axially by ribs, this tread
comprising at least one internal anti-rubber-on-rubber connection element, the outer wall of which,
viewed in meridian section, has in part a contour identical to the contour of the wall of the
10 regrooving groove to be created, the point(s) of said wall which are farthest from the axis of
rotation being radially distant from the tread surface by a quantity h_1 less than the depth h of the
grooves, and the point(s) of said wall which is(are) closest to the axis of rotation being radially
distant from the tread surface by the maximum regrooving height H, wherein each anti-connection
element defining a regrooving groove comprises a means providing a partial connection to its
15 rubber surroundings, said means being at least a rubber bridge which prevents ejection of the
material occupying said regrooving groove during travel when said anti-connection element opens
on to the running surface after wear, while enabling said material to be removed by an operator
after having broken each rubber bridge.
2. The tread according to Claim 1 wherein the anti-rubber-on-rubber connection element(s) are
20 cutouts or incisions the walls of which are spaced apart by a thickness of between 0.2 mm and 2
mm, and separated by the atmosphere.
3. The tread according to Claim 1 wherein the anti-rubber-on-rubber connection element(s) are
spaces of width e or inserts, filled with a solid material having the property of being an anti-
sticking means between rubbers and of not sticking itself to rubbers, the width e possibly being
virtually zero.
- 25 4. The tread according to Claim 1 wherein the anti-rubber-on-rubber connection element(s) are
spaces of width e or inserts, composed of a solid material having the property of being an anti-
sticking means between rubbers and of tearing easily, the width e possibly being virtually zero.
5. The tread according to Claim 1 wherein the anti-connection elements be they in the form of
incisions or spaces with anti-sticking material, have outer walls which, viewed in section, are
30 represented by a closed curve such as a circle or parallelogram.
6. The tread according to Claim 1 wherein the anti-connection elements, be they in the form of
incisions or spaces with anti-sticking material, have outer walls being, viewed in section,

represented by an open curve, the anti-connection element then having at least two branches of thickness e , which are substantially parallel to the equatorial plane.

7. The tread according to Claim 1 wherein those points of the outer wall of an element which are farthest from the axis of rotation are preferably distant from the tread surface by a quantity h_1 such that the difference $(h - h_1)$ is at least equal to the standardized thickness of the wear indicators located in the bottom of circumferential grooves.

8. The tread according to Claim 6 wherein the radially outer ends of the branches of the incisions or inserts arranged in said tread have contours in the form of continuous lines of variable height, said height being measured relative to the bottom of the anti-connection element.

9. The tread according to Claim 8 wherein the contours are representative of a periodic function.

10. The tread according to Claim 6 wherein the branches are independent of each other, the radially lower ends of said two branches being distant by a quantity at most equal to 6 mm.

11. The tread according to Claims 3 wherein the walls of the inserts with solid anti-sticking material are provided with a plurality of orifices, each orifice having a surface area at most equal to 25 mm² and dimensions of between 0.5 mm and 25 mm, and the amount of bridging being between 5% and 35%.

12. The tread according to Claim 1 wherein the anti-connection elements form a network so as to obtain not only the regrooving of circumferential grooves but also the regrooving of the transverse and/or oblique grooves opening on to said circumferential grooves.

13. The tread according to Claim 1 wherein each anti-connection element furthermore comprises a means for making visible the anti-connection element on the tread when the wear of said tread is such that the ends of said element which are radially closest to the running surface in the initial state come into contact with the roadway during travel.

14. The tread according to Claim 1 wherein each anti-connection element comprises a means indicating that said filler opens on to the running surface of the tread after partial wear, this means consisting for example of a coloration of the anti-connection element which is different from that of the tread.

15. A process for manufacturing a non-vulcanized tread according to Claim 3 wherein, it comprises the following steps:

- a) producing a first profiled tread of non-vulcanized rubber mix with grooves corresponding to the regrooving grooves to be created,

- 5 b) producing the inserts of solid anti-sticking material, the inserts lying, when viewed in meridian section, closely against the form(s) of the regrooving grooves, said inserts being provided with means adapted in number, dimensions and location in order to obtain at least a rubber bridge between the regrooving filler and the rest of the tread, said rubber bridge holding said fillers in place in the tread during rolling.
- c) inserting said inserts into the grooves of the first tread above,
- d) laying in said grooves provided with their inserts profiled regrooving fillers of non-vulcanized rubber mix,
- 10 e) possibly laying on the assembly thus constituted a second tread of non-vulcanized rubber mix.

15 16. A process for manufacturing a prevulcanized tread according to Claim 2 wherein, it then consists of using a vulcanization mould having two dies, with a first die of said mould comprising as molding elements inter alia metallic lamellae capable of creating by molding and vulcanization the anti-connection elements, incisions, and a second die comprising the molding elements intended to form the grooves and/or the incisions of the new tread.

20 17. A method of regrooving a tread according to Claim 7 wherein it consists, after visualization of the radially upper ends of the anti-connection elements, of cutting out a small number of bridges of vulcanized rubber connecting each regrooving filler to the rest of the tread and extracting each filler by breaking the rest of the bridges of vulcanized rubber by traction.